Utility Model Application

(JP, 05-27304, Y (1993))

CLAIMS

[Utility model registration claim]

[Claim 1] An adjustment device used for electric power mirrors comprising:

a mirror holder 14 that holds a mirror, an actuator housing 10 on which said mirror holder 14 is movably supported with a tilt angle, an adjustment nut 12 of which tip portion has a ball shape pivot 13 seized by a ball receiving joint 15 which is apart from a rotational center 30 of said mirror holder 14 and worm gear mechanism that has a worm wheel 16 by which said mirror holder can be adjusted in said holding angle against said actuator housing 10, wherein;

a cylindrical hole 16a in which said adjustment nut 12 can move along a rotation axis is formed in a center of said worm wheel 16, a rotational force transmission rib 12b that limits a free rotation against said worm wheel and trenches 16b that allow said movement along a direction of rotation axis of said worm wheel 16 are formed,

a screw column 17 is solidly formed on said actuator housing 10 along said rotation axis of said worm wheel 16, and

said adjustment nut 12 has a salient nail 12a extending to have a screw-contact with said screw column 17.

[Claim 2] An adjustment device used for electric power mirrors defined by Claim 1, wherein;

said screw column 17 is fixed to said actuator housing 10 by using a screw thread 18.

[Claim 3] An adjustment device used for electric power mirrors defined by Claim 1, wherein;

said screw column 17 has a ball shape pivot 13 that has a means not to freely rotate at a terminal said thereof and that is seized by a socket portion 21 installed into said actuator housing 10.

DETAILED DESCRIPTION

[Industrial Application]

This design is related with an adjustment device used for electric power mirrors installed to automobile back mirrors to control the sight angles for drivers using an electric remote control device, more specifically, the screw contact between the screw column 17 and the salient nail 12a of the adjustment nut 12 is firmly kept so that no thrust movement of the adjustment nut 12 is made even a gap is made between an actuator housing 10 and a screw column 17.

[Problem of the Prior Art]

FIG. 6 shows a cross sectional view of the conventional electric power mirror mechanism. The play of gaps is made from those between i) the rear housing 1b and the pivot screw 4, ii) the front housing 1a and the pivot screw 2 and iii) the worm screw wheel 4 and the worm wheel 3. Also to allow the arch movement of the adjustment nut 7, the seizure between the worm wheel 3 and the pivot screw 4 is required, that results into generating further play of gaps so that thrust movement of the adjustment nut is made. It takes tuning time to minimize the play of gaps in the assembly process of this electric power mirror.

[Means for Solving the Problem]

In order to solve the problem, an adjustment device used for electric power mirrors, comprising a mirror holder 14 that holds a mirror, an actuator housing 10 on which the mirror holder 14 is movingly supported with a tilt angle, an adjustment nut 12 of which tip portion has a ball shape portion 13 seized by a ball receiving joint 15 which is apart from a rotational center of the mirror holder 14 and worm gear mechanism that has a worm wheel 16 by which the mirror holder 14 can be adjusted in the holding angle against the actuator housing 10, wherein a cylindrical hole 16a in which the adjustment nut 12 can move along a rotation axis is formed in a center of the worm wheel 16, a rotational force transmission rib 12b that limits a free rotation against the worm wheel and trenches 16b that allow the movement along a direction of rotation axis of the worm wheel 16 are formed, a screw column 17 is solidly formed on the actuator housing 10 along the rotation axis of the worm wheel 16, and the adjustment nut 12 has a salient nail 12a extending to have a screw-contact with the screw column 17, is proposed

The methods of fixing the screw column 17 can be selected from using a thread screw or a socket.

[Effect of this design]

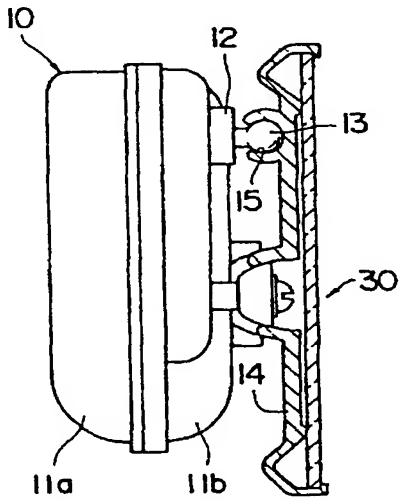
When the worm wheel rotates, the rotating movement is transmitted to the adjustment nut 12 through the trenches 16b, the rotational force transmission rib 12b. Since the adjustment nut 12 contacts with the screws column 17 in a manger of screw, the adjustment nut 12 smoothly rotates and moves in the thrust direction without a

play that results into the movement of mirrors in the direction of back and forth. In accordance with this movement,, the mirror holder moves at the central pivot that results into the adjustment of sight view angles. No tuning time in the assembly is requested in this design of the electric power mirror.

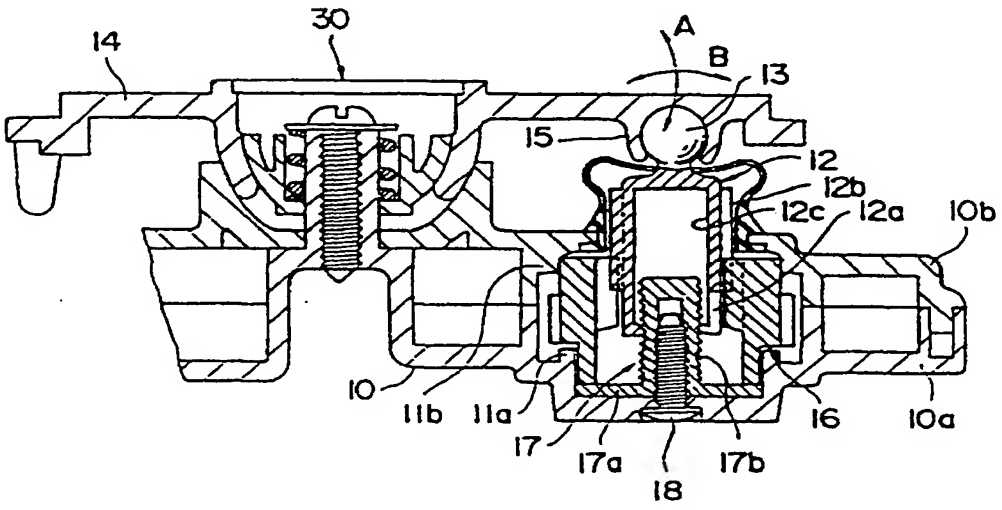
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

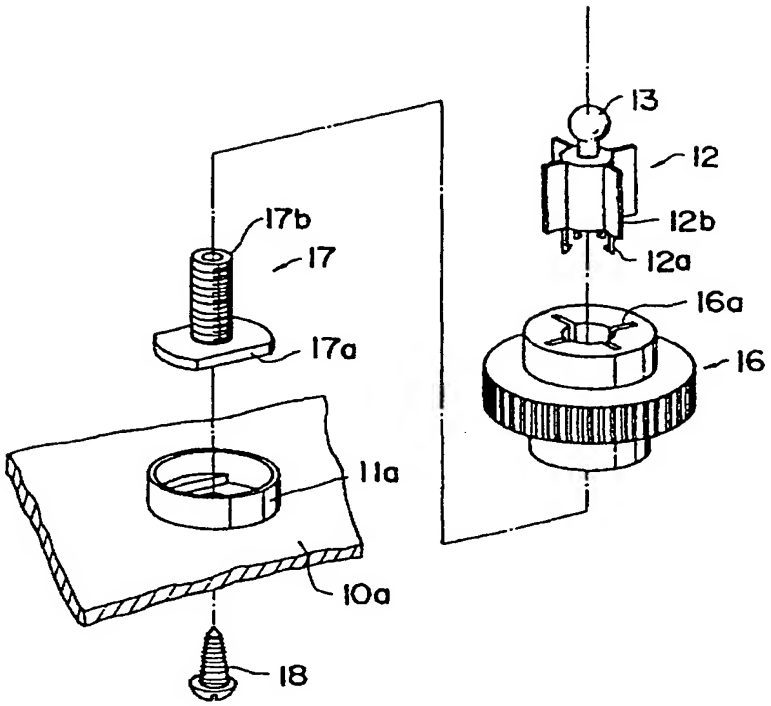
[Drawing 1] The out look of the adjustment device used for electric power mirrors



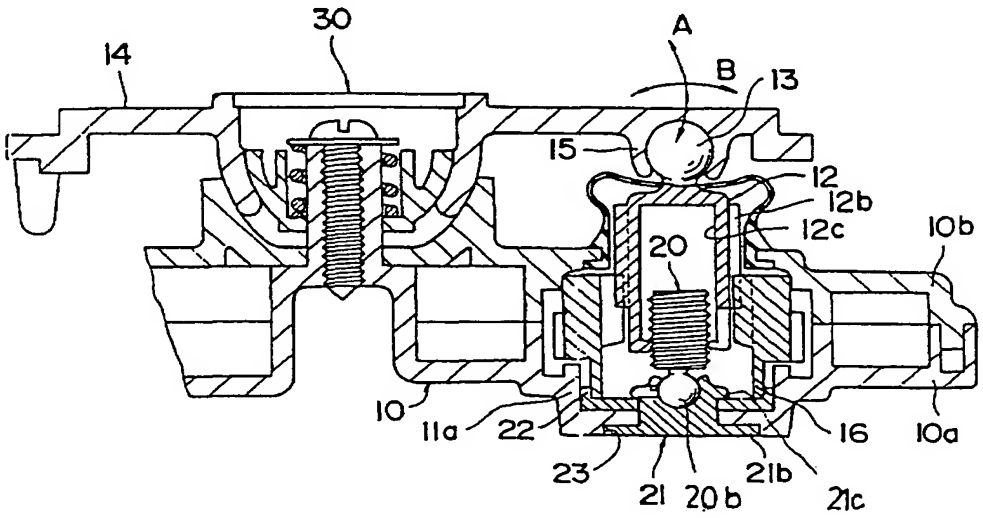
[Drawing 2] A zoom up cross sectional view of the major portion regarding to this design



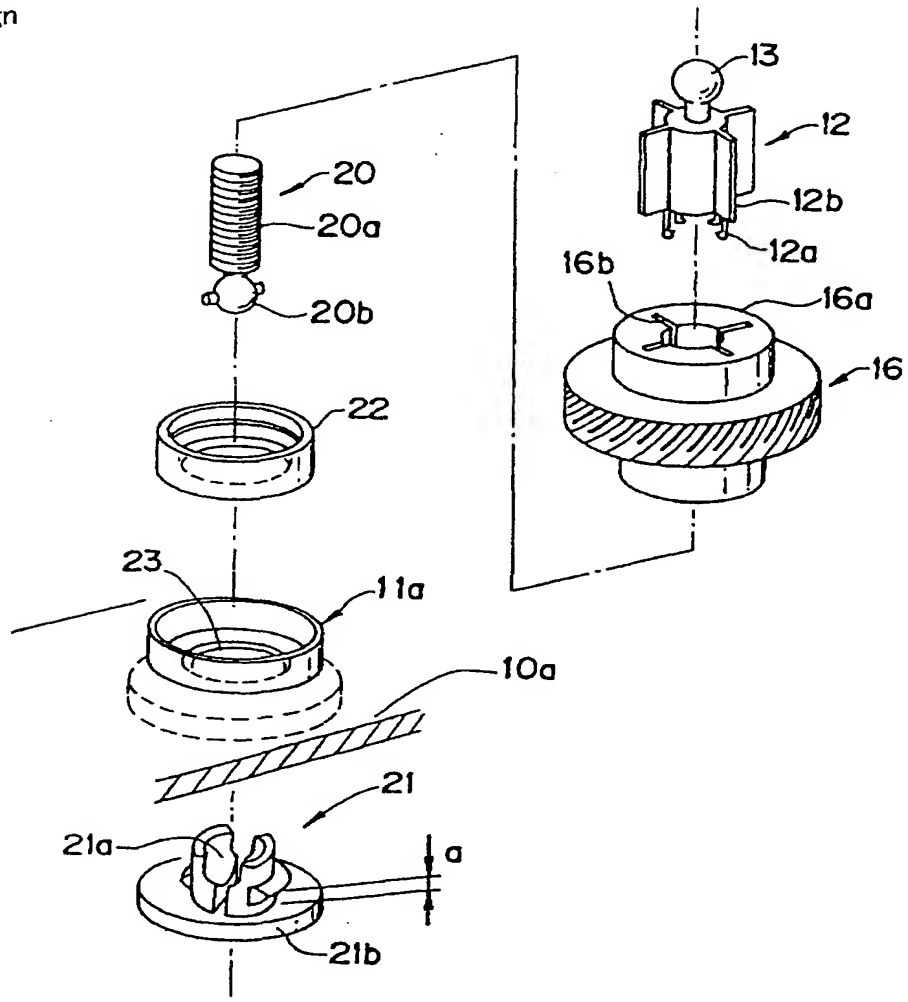
[Drawing 3] A perspective view of the disassembly of the major portion regarding to this design



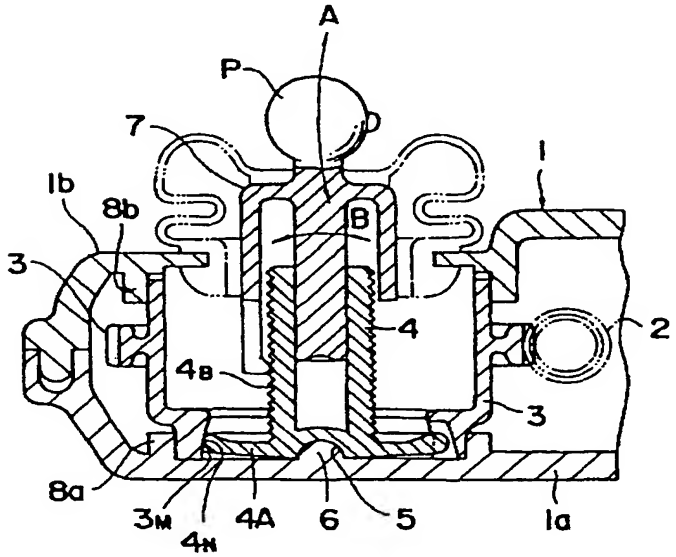
[Drawing 4] A major portion of an embodiment regarding to this design



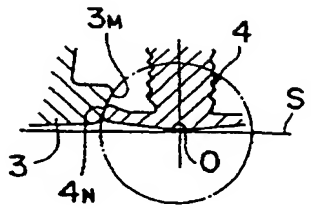
[Drawing 5] A perspective view of the disassembly of an embodiment regarding to this design



[Drawing 6] A cross sectional view of the conventional electric power mirror



[Drawing 7] A cross sectional view of a portion of the conventional electric power mirror



[Description of notations]

2:	Pivot screw
3:	Worm wheel
4:	Pivot screw
7:	Adjustment nut
10:	Actuator housing
11a and 11b:	Circular supporting portion
12a:	Salient nail
12b:	Rotational force transmission rib
12c:	Cylinder body
13:	Ball shape pivot
14;	Mirror holder
15:	Ball receiving joint
16:	Worm wheel
16a:	Cylindrical hole
16b:	Trench
17, 20:	Screw clumn
17a:	Substrate that has a rotation stopper
17b, 20a:	Screw rod
20b:	Ball pivot
21:	Socket portion
22:	Set ring
23:	seizure hole with steps
30:	Rotational central